

Chapter 11 Review

Matrices and Systems of Equations

Name _____ Date _____

General info

True or False: The test will have a calculator section and a non-calculator section.

Section 11.1 (substitution and elimination) is not the focus of the chapter. There may be questions where you can use these methods if you want, but it will not be required.

The main ideas in the chapter are divided into two parts:

- Matrix methods – 11.2 – 11.4
- Other problems involving systems of equations and inequalities – 11.5 – 11.8

Calculator skills

Lots of new calculator skills, related to matrices:

- Entering and editing matrices
- In the MATRIX/MATH menu, finding a determinant and putting a matrix into (reduced) row-echelon form
- Finding the inverse of a matrix

Matrix methods

For this section, you mainly need to review the types of problems from the quiz. Note, however, that some similar questions may appear on the non-calculator section.

You need to be familiar with 3 different ways to solve systems of equations using matrices:

- Row operations
- Cramer's Rule
- Inverse matrix method

1. Which is the only one of these methods which can distinguish between no solutions and an infinite number of solutions? How do you do this?

3x3 matrices

- Determinant – calculator and non-calculator
- Inverse matrices – calculator only

2. Find the determinant of $\begin{bmatrix} 1 & 3 & 2 \\ 6 & 1 & -5 \\ 0 & 2 & 3 \end{bmatrix}$. [No calculator]

And don't forget matrix multiplication and other matrix operations.

3. What is the difference between an *identity* matrix and an *inverse* matrix? What is their relationship?

11.5 Partial fractions

The section in the book is divided into 4 parts – you are only responsible for the first one, nonrepeated linear factors

4. Find the partial fraction decomposition of $\frac{4x}{2x^2 + 3x - 2}$.

11.6 Systems of nonlinear equations

In this section, we are looking at systems of equations where one or both are quadratic. The matrix methods do not work in this case, so you do have to use substitution and/or elimination.

5. Solve the system
$$\begin{cases} x^2 - 4y^2 = 16 \\ 2y - x = 2 \end{cases}.$$

11.7 and 11.8 Systems of inequalities and Linear Programming

11.7 is more or less preparation for 11.8, which is the last major new idea of the chapter. You should be prepared for pure math examples and/or word problems, as on the handout from last time.